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USSR Report

ECONOMIC AFFAIRS

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INVESTMENT, PRICES, BUDGET AND FINANCE

IMPORTANT OFFICIALS COMMENT ON PRICES

Official Discusses Price Formation

Leningrad LENINGRADSKSYA PRAVDA in Russian 22 Sep 84 p 2

[Interview with V. Ye. Yesipov, by Zh. Manilova, date and place not specified]

[Text] Today, when our country is forming the basic directions for economic and social development for the Twelfth Five-Year Plan and the longer term, special importance is placed upon the development of economic measures which would assure the most complete use of the advangages of the socialist planned economic system. This is a matter for all the people, but a special role in this important work belongs to scientists, first of all representitives of economic science. V. Ye. Yesipov, doctor of economic sciences and chief of the Laboratory for Price Formation at the Leningrad Financial-Economic Institute, answers questions from our correspondent.

[Question] Improved production efficiency, a key problem for our economy, depends upon many factors, on perfections in the economic mechanism, automation and so on. To what extent do solutions to this problem depend upon price formation?

[Answer] In order to answer your question, I will first dwell upon the connection between prices and plan. It is known that plan indicators should be stable for the five-year plan. However, this stability cannot be attained without price stability. On the other hand, life is life and it requires constant changes in prices. Today in distant regions the main logging season is under way, great outlays are needed for transport. Deeper wells are being drilled in oil fields and petroleum products are getting more expensive. On the other hand, successes in chemistry have sharply reduced the prime costs of synthetic materials and plastics. The majority of economists consider it necessary for there to be extensive changes in the price system every five years. They are made so that new wholesale prices are introduced on the eve of a new five-year plan, that is so the plan itself will be made in new prices.

We did not suceed in doing this during the current plan. As is known, new wholesale prices were introduced on 1 January 1982 and on 1 January 1983 there were substantial changes in the system of procurement prices. These prices can be maintained during the future, Twelfth Five-Year Plan and thus assure the stability of plan indicators.

The price formation system is very complex, multifaceted and its formation is extremely laborious. Its current and long term planning is essential. The USSR Academy of Sciences' Institute of Economics, the All-Union Scientific Research Institute for Price Formation and other institutions in the country are now working on the conceptual outlines for improvements in plan price formation up to the year 2000.

[Question] What difficulties arise in this regard?

[Answer] Well, for example, how does one improve price formation: for various types of products (metals, agricultural products, etc), or does one immediately make changes in the entire price system (wholesale, purchase, retail)? The question is not so simple, as it concerns the economy on a state wide scale.

[Question] If, for example, there are changes in purchase prices, will this be reflected in retail prices?

[Answer] In a capitalist economy any movement in purchase or wholesale prices is reflected with lightning speed in retail prices. For example, a poor grain harvest means increases in purchase prices for grain and in retail prices for baked goods. The advantage of our planned economy is that it makes possible a policy of price stability through the internal redistribution of the state's net product. Probably not everybody knows that the difference between meat and milk purchase prices and the retail prices for meat and milk products amounts to 40 billion rubles annually in our country. This is still a losing sector of agricultural production. The difference is covered through the state budget.

[Question] In short, the maintenance of retail price stability is a very expensive measure?

[Answer] In the opinion of most economists, it would be advisable in the long term to work out an effective methodology for improving the entire system of prices: purchase, wholesale and retail. Prices should be dynamic, balanced and include many factors (seasonality, changes in production, outlays for transport, sales, the public's income, etc). As I have already said, they should be corrected every five years.

Such an approach will make it possible to vividly show our citizens how outlays for the production of the gross social product are changing. After all, each of us, participating in social production, is a producer and a consumer. In short, not only the quality of each and every good, but also its price depends upon each and every one of us. As we are all producers and consumers, we can make totally justified proposals for price changes.

[Question] Price as a social factor?

[Answer] Unconditionally. Although they are an economic category they also touch upon workers' social and invididual interests. I would add that it is a category which permits each member of our society to improve state price discipline. What do I have in mind? Price is a reflection not of individual, but of socially necessary outlays for production. Look at this: by comparing

the price and prime cost of various output, one can judge the economic efficiency of its production, and thus, the contribution which it makes to total national income. If it is losing money, this means that it must be covered by more productive labor at other enterprises (kolkhozes and sovkhozes).

[Question] Once, the term "social parasitism"[tuneyadstvo] was occasionally heard in this regard.

[Answer] Yes, economists are beginning to use it, admittedly, still somewhat shyly. As price is a criterion above all reflecting national economic interests, the observation of state price discipline (a product's prime cost should always be lower than its price) now assumes exceptionally great importance in the struggle to improve the efficiency of social production.

[Question] This is, apparently not everything. Can prices help to stimulate the production of new technology? This also concerns assortment.

[Answer] Mark-ups on the wholesale price for new technology give consideration to its economic efficiency and consumer demand. Sometimes they amount to 30 percent. However, even they do not always compensate an enterprise for all production outlays. Even higher wholesale prices are required. But high prices reduce consumers' interest in the item. Take robots for example. They are expensive, although in the long term they are profitable.

[Question] What must be done so that they will be profitable to consumers but will not cause the producer to lose money?

[Answer] It is impossible to solve this contradiction only with the help of prices. It is essential to find the optimal combination of prices and other economic incentives to scientific and technical progress. The economic experiment now being conducted in our country is directed towards a solution to this problem.

[Question] In hearing your discussion about the broad nature of price formation, I want to ask one more question. How can prices stimulate our production of mass consumption goods?

[Answer] Our present price system gives enterprises sufficiently wide interest in increasing the production of new, fashionable goods enjoying increased demand. During their "innovation period" higher prices are set for them. Perhaps use can be made of so-called contract prices between enterprises and trade organizations, for example, for wholesale batches of especially fashionable goods. Thus, the retail price system would become more flexible and dynamic.

However, in addition to goods in fashion, there are also goods of so-called everyday demand. These have long been produced, are always necessary and should be constantly for sale. Recently there has even been somewhat of a distortion towards new goods. It has become profitable for producers to make them, while

old, low cost goods are therefore unprofitable. Economists think that the complete satisfaction of the public's demand for new and for traditional goods requires broad control over the entire assortment of products produced. However, it will be fair control: the advantages of planned price formation over a random market are obvious. It protects us from fearsome inflation, sensless increases in prices and reductions in the real income of each member of our society.

Return to Old Price Limits

Moscow EKONOMICHESKAYA GAZETA in Russian No 36, Sep 84 p 15

[Article by N. T. Glushkov, chairman, USSR State Committee on Prices

> [Text] In a letter to the editors, V. Piskunov (Moscow), and engineer-economist, wrote of the need to return to the previous procedure for setting limit prices on new technology, using prices to strengthen the interest of enterprises in mastering new production and increasing responsibility for the basis of draft calculations of wholesale prices. The editors sent these proposals to the USSR State Committee on Prices and received their answer.

Under the previous methodology, limit prices were determined on the basis of the so-called uper bound for prices, taking into consideration the new output's usefulness. With this method the designers of new technology did not give sufficient attention to the justifiability of outlays and reserves for reducing them.

The new method for determining limit prices, used in the product design stage, assures their continuity with wholesale prices and controls the levels of planned prime cost to assure the new product's economic efficiency at minimum production costs. The consumers' interests are assured by the economic effects from the new technology's use.

Calculations of limit prices and the corresponding magnitude of the economic effect are made at all stages of a new product's design: from the development of techno-economic substantiation and technical targets for design to the beginning of series production. They are corrected with increased volumes and improved reliability of information during the transition from initial to subsequent stages of development.

The USSR State Committee on Prices cannot agree with your conclusions about plants' lack of interest in the manufacture of new technology due to insufficient price stimulation. Wholesale prices for new products completely compensate manufacturing enterprises for economically justified (normed) outlays and assure that the introducing enterprise's profitability, even in the first year of series production, equals that obtained in the production of the products they replace. If the new products are not intended to replace previous ones, the profitability assumed in setting wholesale prices cannot be lower than the

planned profitability set for the manufacturing enterprise in the year the output was mastered. Also, incentive mark-ups are established for high technical standards, quality and efficiency. These create additional profits, up to 70 percent of which are directed to economic stimulus funds. As practice shows, this procedure for distributing incentives mark-ups stimulates design organizations and manufacturing enterprises to create and produce high quality, highly efficient new products.

You correctly noted that ministries and enterprises still increase outlays for the manufacture of products when presenting draft prices for approval. According to reviews and expert evaluations of draft wholesale prices by the USSR State Committee on Prices, about 30 percent of prices are reduced by 10-15 percent and more. Measures are being taken to strengthen state price discipline. According to results from reviews by price formation organs, all gains an enterprise illegally obtains from violations of price discipline are confiscated and simultaneously substracted from reports on plan fulfillment.

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INTENSIFIED CAPITAL STOCK REPLACEMENT, AMORTIZATION VIEWED

Fixed Capital Renovation

Moscow EKONOMICHESKIYE NAUKI in Russian No 7, Jul 84 pp 37-43

[Article by G. Aleksandrov, docent, candidate of economic sciences (Kalinin):
"Intensification of Renovation of Fixed Capital"]

[Text] Prompt and high-quality renovation of fixed production capital of enterprises that are in operation, while being one of the most important factors in the intensification of public production and the increase in its effectiveness, at the same time is, in addition, an essential sign, a principle of the intensive type of production as a whole. This provision is realized through the amortization period for the service of fixed capital and individual elements of it.

The economically optimal amortization period for the service of fixed capital, whose substantial content are implements of labor, is determined by the laws of physical and moral wear and tear on this capital. Therefore it reflects the change in the consumer value of implements of labor and takes into account the possibility of improving it since technical progress creates prerequisites for the renovation of fixed capital in a more modern form. Thus there is an interconnection between the qualitative level and the promptness of the renovation of fixed capital. And the qualitative level of renovation affects the criteria for its promptness, that is, the length of the amortization time period for the service of equipment. According to our calculations, if, for example, the new machines that are used for the renovation of existing technical equipment are less than 30 percent more effective than the old ones, there is no need for an essential reduction of the period of service of the equipment. But if the increase in the effectiveness of new machines exceeds 30 percent, it is necessary to reduce the amortization period for the service of the existing equipment to approximately five-ninths of the previous duration.[1] A correctly determined economically optimal amortization period for the service of equipment, which is adopted as a normative amounts, is a reference point for prompt and high-quality renovation of fixed capital.

Let us assume that the time periods for amortization have been revised in the direction of reduction while the norms for amortization have been correspondingly increased. Then the realization in practice of the intensive

type of renovation of fixed capital in keeping with the new normatives objectively requires a different structure for the reproduction proportions, bringing them in line with the changed conditions. It is clearly shown that improvement of the reproduction proportions is an important factor in the intensification of fixed capital.

Let us note that in economic literature reproduction proportions are regarded, as a rule, only individually, and very rarely in their interconnection. This is explained, in our opinion, by the lack of a clearcut criterial basis which predetermines, in the first place, the kinds of proportions and their interconnection (system) and, in the second place, their internal structure and their direction toward a changeover to the intensive type of renovation of fixed capital.

Since, as was noted above, the reference point for intensive renovation of fixed capital is the amortization period of service, the latter exerts a most important influence on the kind and nature of reproduction proportions. Under the conditions of the known volume of fixed capital that is in operation and a known volume of production of its material elements--means of labor--the time period for their renovation and practice depend primarily on the ratio between the new means of labor which are used for expanding capital and for replacing outdated capital. This is the initial reproduction proportion. A variety of this is the proportion in capital investments that is used for expansion and replacement of existing fixed capital with new capital, and also for the formation of the active and passive parts of this capital. The first proportion presents the unity of the movement of the physical and value forms of fixed capital. What is derived from it is the proportion that characterizes the methods of renovation of fixed capital and is expressed in the ratio between capital investments for technical re-equipment and reconstruction of existing production, on the one hand, and the expansion of production and new construction, on the other. The arbitrary nature of the second of the proportions we have named here is determined by the fact that the ratio in the methods of renovation is a concrete form of the realization of the first proportion.

The content of the third reproduction proportion is the ratio among the sources of gross capital investments. Its reflection is, on the one hand, the ratio in the amortization deduction (for renovation) among those parts used for expansion and replacement of fixed capital and, on the other, the ratio between the means of amortization (for renovation) and the added product in gross capital investments.

When carrying out the intensive type of renovation of fixed capital it is exceptionally important to improve the proportions between the main machine-building production and the repair business. Let us note that this fourth proportion in our list is practically not envisioned in economic literature. This proportion reflects the ratio between the funds for renewal of fixed capital (repair and renovation), and its internal structure changes as one revises the time periods and norms for amortization. This is manifested concretely in the advances made in the structure of capital investments which are used for the production of new means of labor and for their repair. And the total amount of capital investments also changes.

The realization of the intensive type of renovation of fixed capital requires that the aforementioned reproduction proportions be provided for by the principle of promptness (in keeping with the economically optimal amortization periods) of renovation; this joins these proportions together and combines them into a system. And this predetermines the internal structure of each of the proportions that are included in the system and the need for improving it as it changes over toward mainly an intensive type of renovation of fixed production capital.

It is known that at the present time, the rates of renovation of existing fixed production capital in USSR industry are still not providing for its replacement not only with an optimal, but even within normative time periods. It is no accident that the 26th CPSU Congress set the task of accelerating the rates of renovation of technical equipment approximately 1.5-fold.[2] Carrying out this task will depend to a considerable degree on the structure of the balance of the equipment that is produced and the structure of capital investments, in other words, on the proportions that take form among those parts which are used for the replacement of withdrawn fixed capital and the expansion of that which remains. In the presently existing situation it is necessary to have a considerable increase in the production of new technical equipment and in that proportion of capital investments which are intended for this which is to be used for the replacement of withdrawn capital. Thus the proportion of withdrawal of capital in USSR industry was 16 percent of the gross capital investments at the end of the 10th Five-Year Plan, which is 1 percentless than at the beginning of the same five-year plan. In machine building and metal processing during the course of the 10th Five-Year Plan this proportion dropped to the level of 11 percent. Let us note that in the United States it amounted to 50 percent (1979) in this branch.

The slow withdrawal and replacement of obsolete capital has led to a situation in which the proportion of "young" capital, introduced under the 10th Five-Year Plan, decreased in the overall volume of capital from 40 to 36 percent, including in machine building--from 43 to 41 percent. It would be possible to compensate for a reduction in the proportion of "young" capital with a low level of withdrawal of obsolete capital only by considerably increasing the gross capital investments as compared to the plan for the 10th Five-Year Plan. Taking into account the fact that growth rates of the latter are planned to be considerably lower under the 11th Five-Year Plan than under the 10th, and also that this tendency will continue until the year 1990, it would be expedient to increase to 60-70 percent the proportion in the capital investments which is used for replacing worn-out capital, and to correspondingly increase its withdrawal 2-2.5-fold. In this case, according to our calculations, the rate of renovation of fixed capital will increase to a degree which provides for the withdrawal and replacement of existing capital in keeping with the accepted normatives for the amortization periods of their service.

The structure of capital investments allotted for the replacement and expansion of fixed capital can be improved only under the condition that there is an increase in the proportion of intensive methods of renovation, and namely--technical renovation and reconstruction of existing production as compared to expansion and construction of new enterprises. Although all

methods of renovating fixed capital, as a rule, provide for growth of the production volumes, the first two which were mentioned here are among the intensive types since they provide not for expansion, but qualitative improvement of the production apparatus and, which is especially important--without increasing the number of workers. It is appropriate to note here that K. Marx thought that an increase in production was extensive if it was carried out "...through construction of new factories in addition to old ones..." and intensive, if it took place "...through increasing the scale of production at a given enterprise."[3] Here, in our opinion, K. Marx had in mind the renovation, since he associated increasing the scale of production with the accumulation of means of labor and, conversely, pointed out that "...proportional expansion of the entire enterprise is possible only within certain more or less narrow limits which are conditioned partially by the overall nature of the enterprise, for example, the buildings..."[4]

In our opinion, there is no justification for the idea of expansion of the enterprises as a kind of reconstruction,[5] although, of course, reconstruction and expansion of enterprises are frequently combined in practice. V. G. Zakharov was right when he pointed out that "...expansion of existing enterprises has more in common with new capital construction than with reconstruction."[6]

The decisions of the 26th CPSU Congress stipulate that under the current five-year plan and in the future technical re-equipment and reconstruction of existing enterprises should take priority over the construction of new enterprises and the expansion of old ones.[7]

In order to make progressive planning decisions regarding the renovation of fixed capital and improvement of the structure of capital and investments under conditions in which the goal is their prompt withdrawal and replacement of the outdated part of them on a qualitatively new basis, it is necessary to delineate clearly the methods of renovating their content. In our opinion, technical reequipment is a process whose content is the continuous replacement of fixed capital after it has served for a particular normative time period, and it is a replacement which does not require changes in the passive part of fixed capital.[8] The high effectiveness of this method of renovation is determined by the fact that its application makes it possible, as a rule, to locate a larger quantity of equipment in the same production areas, to provide for servicing more than one machine tool and, consequently, to reduce the number of workers who are necessary. It is quite essential that capital investments which are invested totally in the active part are recouped considerably more rapidly, usually 2.5 years sooner.[9]

But in practice this method of renovation has its limits. First and foremost, in old areas it is impossible to have the necessary improvement of production and social conditions for labor. Frequently the old production premises do not meet the conditions for efficient distribution of new equipment from the standpoint of the convenience of servicing it or the observance of the requirements for technical safety and protection of labor. In this connection, technical re-equipment in many cases requires rearrangement of the buildings and structures, and the corresponding renovation of the production apparatus assumes the nature of reconstruction. The high effectiveness of

this method of renovation has been shown, for example, by the experience in reconstructing light industry enterprises in Ivanovo Oblast. The reconstruction of the Yakovlevo flax combine made it possible to increase its production capacity 2.14-fold, with a 2-fold increase in labor productivity, and the additional capital investments were recouped in 2.5 years. This kind of increase in production capacity as a result of new construction would have required 2.6 times more expenditures than were required for reconstruction, and the need for labor force would also have been greater.[10]

The high effectiveness of reconstruction is related, among other things, to the possibilities of improving the proportions between the active and passive parts of the fixed capital of enterprises that are in operation. Reconstruction as an increase in the "scale of production at a given enterprise" contributes to raising the level of concentration of production, since, in particular, "...one saves on outlays for all kinds of construction, not only in the shops in the literal sense of the word, but also in the warehouse premises, and so forth."[11] Modern practice shows that if the proportion of capital investments in the passive part during reconstruction amounts to about 25 percent, in new construction it increases to 60-70 percent.[12]

Economizing on the passive part of fixed capital as a result of reconstruction and increasing the proportion of working machines and technical equipment are manifested, all other conditions being equal, in a growth of the output-capital ratio. L. M. Kantor, for example, thinks that a 1 percent increase in the proportion of the active part of fixed capital in industry contributes to increasing the output-capital ratio by 0.3-0.35 percent.[13]

At the same time, a change in the technological structure of capital investments in the direction of increasing in them the proportion intended for the active part is still taking place slowly. For instance, during the past 20 years this proportion has increased in industry an average of from 42 to 51 percent, and in such a branch as the textile branch, at the end of the 10th Five-Year Plan it reached 62 percent. For comparison let us note that the proportion of equipment in capital investments in the U.S. textile industry during 1977-1979 amounted to 87 percent.[14]

The inadequate implementation of technical re-equipment and reconstruction as a method of renovating fixed capital does not contribute to improving the technological structure of capital investments and fixed capital at existing enterprises.[15] Since, as was noted earlier, the period of service of the active part of existing fixed capital essentially exceeds the normative amount (not to mention the optimal amount), one cannot consider it normal for the proportion of the intensive methods of renovation to stabilize at the level of 20 percent.[16] Their increasing application should be promoted by the implementation of the course earmarked in the decisions of the 26th CPSU Congress toward concentration of capital investments and their use primarily for reconstruction and technical re-equipment, which is especially important under the conditions of the reduced growth rates of the gross production capital investments.[17]

The realization of both kinds of methods of renovating fixed capital depends on the composition of the planned volume of gross capital investments. This should also be reflected in the structure of their sources: in the ratio between amortization deductions (for renovation) used to replace and expand the capital, and also in the proportions between the amortization deductions (for renovation) and the accumulated part of the added product.

K. Marx pointed out the possibility of extensive and intensive utilization of the amortization fund. It "...can serve for expanding the enterprise or making improvements in machines which will increase their effectiveness."[18] As a result reproduction is carried out on an expanded scale which, in the words of K. Marx, "...ensues not from accumulation--not from the transformation of the added value into capital, but from reverse transformation of value which, having branched off and been separated in monetary form from the body of the fixed capital, has been transformed into something new--into added or more effective fixed capital of the same kind."[19] Guided by this tenet, we have reason to conclude that it is precisely on the basis of the nature of the utilization of such a source of accumulation as the amortization fund that K. Marx determines the type of expanded reproduction. Hence follows an exceptionally important conclusion: under the conditions of the changeover to primarily and intensive paths of development of the economy, the role of amortization deductions as a source of renovation increases, which is manifested primarily in an increase in their proportion which is utilized for complete and prompt replacement of obsolete capital. Unfortunately, statistical data show that the proportion of amortization deductions used for complete replacement of fixed capital is clearly inadequate at the present time. In 1970-1980 in the USSR it amounted to an average of 40 percent, while in developed capitalist countries it was 70-75 percent.[20]

Let us calculate the proportion of the amortization fund (a) in the overall renovation fund, having changed Domar's well-known formula somewhat:

$$a = \frac{r}{(e^{rm} - 1) \times A'} \times 100\%$$

where A'--the amortization norm for renovation; r--the average annual growth rate of fixed capital; m--the average normative period of service of fixed capital (years).

Our calculation, done according to this formula, shows that the proportion of amortization funds used to replace withdrawn capital in keeping with the normative time periods for their service should amount to 53.5 percent, while actually this amount has reached only 37.9 percent.

Along with the intensification of the renovation of existing fixed capital, with an increase in the proportion of that part of the amortization funds which is used for replacing worn-out capital, and also along with the increase in the proportion of reconstruction and technical re-equipment of existing enterprises, there should be a change in the structure of the sources of the gross capital investments in the direction of increasing the proportion of

amortization deductions (for renovation) and, conversely, a reduction in the proportion of pure investments (that is, the accumulated part of the added product). Statistical data corroborate this tendency.

An increase in the proportion of amortization deductions and their role as a source of capital investments is associated first and foremost with a considerable reduction of the amount of pure capital investments and a sharp increase during the preceding period in the volume of fixed production capital and correspondingly in the volume of the amortization fund. Let us note, however, that one cannot consider the increase in the proportion of fixed capital investments as an unconditionally negative factor which shows the extensive nature of the renovation. If one recognizes that the renovation of fixed production capital is taking place continually, that there is a certain cycle of renovation which begins and ends with more or less mass renovation of the active part of fixed capital beyond the limits of the normative period of service, then when there is a reserve of labor force the proportion of pure capital investments can increase somewhat.

The experience of developed capitalist countries shows that the lowest proportion of pure investments is typical of mass withdrawal and renovation of fixed capital. During a period of expanding accumulation of fixed capital, the proportion of pure investments increases. As a result of the periodic change in these processes there is a corresponding change in the proportion of pure investments.[21] But on the whole, in spite of the fluctuations, the proportion of pure investments, as the processing of data given in economic literature shows, has a stable tendence toward reduction.[22] This can be explained, in particular, by the fact that with the established uniform nature of renovation of fixed capital, especially immediately after a period of mass renovation, it is possible to have an accumulation of fixed capital at the expense of amortization funds, which is immediately reflected in the ratio between the parts used for replacement and expansion of capital. There is no reason to think that this tendency cannot be extended to the renovation of fixed capital under socialism.

One can draw the conclusion that in order to change over to the intensive type of renovation of fixed capital, it is important to correctly plan capital investments, the source of which should be primarily amortization deductions for renovation, and then also the added product. This process should be closely coordinated with the solution to the problem of prompt renovation of fixed production capital of existing enterprises.

The establishment of a normative amortization period for service means that complete replacement of elements of fixed capital should take place by the time this period has expired. Throughout the entire period of service there should be a partial replacement of worn-out capital, that is, all kinds of repair work should be done which makes it possible to maintain the fixed capital in working condition. Since at the present time the withdrawal and replacement of fixed capital take place, as a rule, beyond the limits of the normative period of service, the proportions between complete and partial replacement of worn-out equipment are taking shape in favor of the latter. All other conditions being equal, this leads to a change in the proportions between the basic and the repair production and, correspondingly, between

capital investments in the basic and repair production and to a hypertrophide development of the latter.

Certain authors relate the problem of accelerating the renovation of capital to the need for creating the corresponding capacities of machine-building enterprises.[23] In our view, such conclusions are correct only if the task of accelerating the rates of renovation of existing fixed capital are carried out under conditions of increasing or even maintaining their previous growth rates.

But an entirely different situation is taking form in the 1980s. The rates of growth of the gross capital investments are decreasing. The prevailing methods of renovation of fixed capital are those such as technical re-equipment and reconstruction of existing enterprises, that is, we are relying on a considerable increase in the withdrawal and replacement of fixed capital. This objectively demands a redistribution of gross capital investments and, as a result, a change in the structure of products of machine-building branches in favor of that proportion which is used for withdrawal and replacement of the outdated part of the capital. Such a redistribution of newly produced means of labor will contribute to better utilization of existing fixed capital as well. As we know, the coefficient of shift utilization of equipment now does not exceed 1.35, and the surplus of work stations created as a result of increasing fixed capital amounts to about 25 percent.[24] In machine building, for example, the rates of expansion of the fleet of working machines and technological equipment are surpassing to an ever greater degree the rates of growth of the number of machine tool operators. Thus this difference in 1960 was 1.2-1.3-fold, in 1970--1.6-1.7-fold, and in 1980--almost 2-fold.[25] The result of this situation is a larger quantity of uninstalled equipment. The solution is to accelerate the renovation of fixed capital by using a larger part of the equipment that is produced for these purposes.

Let us note that the demand for equipment with accelerated rates of renovation of fixed capital increases to a lesser degree than the period of their service decreases, since the actual productivity of machines used within the normative period of service is less than the normative productivity. Correspondingly, in order to compensate for losses in productivity it is necessary to have more equipment. Our calculations show, for example, that a reduction of the period of service of single-bucket excavators with a 0.25-cubic-meter bucket and pneumatic wheel drive, which are used in agriculture in the Nonchernozem Zone of the RSFSR. from 8 to 5 years with a replacement for new models will reduce the demand for them by 7 percent (with the previous volume of work). There can be a corresponding reduction in the fleet of machines, which will be reflected in the production volume in the corresponding branch of machine building.

On the other hand, with accelerated renovation of existing fixed capital, there is a smaller volume of partial replacement of worn-out equipment, that is, repair work. Consequently, there can be a reduction of the repair business and its fixed capital, and part of the skilled labor force can be released. According to our calculations, with a reduction, in particular, of the amortization period of service of machine tools of the type IA62 and IK62 from 18 to 12 years, the need for the corresponding fixed capital for repair

work will decrease to 20-27ths of the previous amount. The released capital can be used for expanding the capacities of machine-building enterprises.

FOOTNOTES

1. Concerning this see: Akberdin, R., Aleksandrov, D., "Optimization of Repair Work and Periods of Service of Machines," VOPROSY EKONOMIKI, No 12, 1983, pp 33-41.

2. See: "Materials of the 26th CPSU Congress," Moscow, 1981, p 111.

3. Marx, K., Engels, F., "Soch." [Works], 2nd ed., Vol 24, pp 360-361.

4. Ibid., p 361.

5. See: Budunova, N., "The Effectiveness of Types of Reconstruction of Industrial Enterprises," EKONOMICHESKIYE NAUKI, No 6, 1974, pp 29-30.

6. Zakharov, V. G., "Osobennosti Vosproizvodstva Osnovnykh Fondov v Usloviyakh Nauchno-Tekhnicheskoy Revolyutsiy" [Peculiarities of Reproduction of Fixed Capital Under the Conditions of the Scientific and Technical Revolution], Moscow, 1972, p 130.

7. See: "Materials of the 26th CPSU Congress," pp 110, 174.

8. This method is applicable primarily for relatively new or previously completely reconstructed enterprises.

9. See: Krasovskiy, V. P., "Problemy Ekonomiki Kapital'nykh Vlozheniy" [Problems of Economizing on Capital Investments], Moscow, 1967, p 86.

10. See: Khachaturov T., Kapustin, Ye., Sedlov, P., "Socioeconomic Results of Technical Re-Equipment and Reconstruction," PLANOVOYE KHOZYAYSTVO, No 10, 1981, p 74.

11. Marx, K., Engels, F., "Soch." 2nd edition, Vol 25, part I, p 90.

12. See: "New Construction, Reconstruction and Expansion," EKONOMICHESKAYA GAZETA, No 15, 1975, p 9.

13. See: Kantor, L. M., "Teoriya i Metodologiya Fondootdachi Pri Sotsializme." [Theory and Methodology of Output-Capital Ratio Under Socialism], Moscow, 1980, p 62.

14. See: "Problemy Intensifikatsii Proizvodstva" [Problems of Intensification of Production], Moscow, 1978, p 19.

15. The proportion of intensive methods of renovation in nine branches of industry in recent years, beginning with 1976, has practically not changed and has amounted to about 20 percent (see: Smyshlyayeva, L. M.,

"Proizvodstvennyy Potentsial: Puti Povysheniya Effektivnosti]" [Production Potential: Ways of Raising Effectiveness], Moscow, 1981, p 32).

16. See: Senchagov, V., Ostapenko, V., "The Significance of Amortization in Technical Reconstruction," VOPROSY EKONOMIKI, No 1, 1981, p 34.

17. See: "Materials of the 26th CPSU Congress," pp 140, 174.

18. Marx, K., Engels, "Soch." 2nd edition, Vol 24, p 193.

19. Ibid.

20. See: Krasovskiy, V., "Technical-Re-equipment of Production and the Effect If Necessary of Repair," VOPROSY EKONOMIKI, No 7, 1981, p 31; "Problemy Intensifikatsii Proizvostva," p 52.

21. See: Nochevkin, L. P. "Razvityye Kapitalistischeskiye Strany: Problemy Intensifikatsii Promyshlennosti" [Developed Capitalist Countries: Problems of Intensification of Industry], Moscow, 1981, pp 84-91.

22. See: "Effektivnost' Kapital`nykh Vlozheniy (Voprosy Teorii i Praktiki)" [Effectiveness of Capital Investments (Questions of Theory and Practice)], ed. by B. P. Plyshevskiy, Moscow, 1972, p 213.

23. See, for example, Kolegayev, R. N., "Ekonomicheskaya Otsenka Kachestva i Optimizatsiya Sistemy Remonta Mashine [Economic Evaluation of Quality and Optimization of Systems of Repair of Machines], Moscow, 1980, p 138; "Sroki Sluzhby i Normy Amortizatsii Osnovykh Fondov v Promyshlennosti" ["Periods of Service and Amortization Norms for Basic Funds in Industry"], Moscow, 1974, p 54; and so forth.

24. See Kirichenko, V., "Proportionality of Economic Growth and Effectiveness," KOMMUNIST, 1980, No 18, p 32.

25. See: Morozov, B., "The Triumph of Lenin's Ideas on Construction and Strengthening of the Socialist State," PLANOVOYE KHOZYAYSTVO, No 9, 1980, pp 102-103, 106-107.

Amortization Fund in Public Production

Moscow EKONOMICHESKIYE NAUKI in Russian No 7, Jul 84 pp 43-48

[Article by L. Lakunina: "Amortization Fund Under Conditions of the Intensification of Public Production"]

[Text] Under the conditions of the changeover of our country's national economy to the intensive path of development, it becomes especially important, as was emphasized at the 26th Party Congress and in subsequent plenums of the CPSU Central Committee, to utilize existing economic potential efficiently. In this connection problems of utilizing the amortization fund also become

increasingly crucial. It accounts for a considerable part of the country's reproduction fund (12 percent of the total replacement fund and 58.5 percent of the capital investments).[1] The volume of amortization deductions has increased from 18.8 billion rubles in 1965 to 84.1 billion rubles in 1982, that is, 4.47-fold, including for renovation--5.47-fold (see Table 1).

Table 1. Growth of Amortization Deductions in USSR*

	1965	1970	1975	1980	1985
All amortization deductions, billions of rubles	18.8	29.1	49.9	72.7	84.1
Including:					
For capital repair	9.6	14.7	21.0	29.6	33.8
For renovation	9.2	14.4	28.9	43.1	50.3
Growth of amortization deductions (1965=1)	1	1.54	2.65	3.87	4.47
Including:					
Growth of deductions for capital repair	1	1.53	2.18	3.08	3.52
For renovation	1	1.56	3.14	4.68	5.47

* Calculated from: "USSR National Economy, 1922-1982," Moscow, 1982, p 560; "USSR National Economy in 1982," Moscow, 1983, p 519.

Questions related to the utilization of the amortization fund under the conditions of intensification of public production are largely debatable. In particular, while certain authors completely deny the possibility of using this fund as a source of expanded reproduction, others consider it the main source for this.[2]

The theory of reproduction created by K. Marx includes the provision that during the course of its historical development the amortization fund, while being a replacement fund in terms of its economic purpose, can also become a source of expanded reproduction.[3] With the appropriate social conditions this makes it possible to reduce the norm for accumulation and correspondingly to increase the norm of consumption and to create conditions for raising the standard of living of the population. K. Marx considered the conditions whereby the amortization fund can become a source of accumulation to be scientific and technical progress, increased labor productivity and production of the cost of reproduction of means of labor. Scientific and technical progress makes it possible to reproduce means of labor either with fewer expenditures of live and embodied labor or with the same expenditures but in an improved form. Therefore during the time of the functioning of fixed production capital resources are accumulated which make it possible not only to restore existing means of labor, but also to expand them, that is, to carry out accumulation. Since the influence of scientific and technical progress on the course of reproduction is constantly becoming stronger, there is also an increase in the significance of the amortization fund as a source of expanded reproduction. Such is the principal statement of the problem.

When one reveals the real possibilities of utilizing the amortization fund as a source of socialist expanded reproduction, these methodological tenets of K. Marx and F. Engels must be applied comprehensively, taking into account the concrete conditions for management.

In recent years there has been a marked increase in the number of economists who think that under the conditions of the USSR the amortization fund has become the main source of accumulation. Thus, for example, A. V. Sedorovich writes: "In the USSR national economy there is taking place a systematic release of amortization for financing expanded reproduction. In USSR industry during 1960-1976 there was an increase in the volume and proportion of amortization for renovation which is used not for replacement, but for accumulation (from 39.6 percent in 1960 to 65.8 percent in 1976)."[4] In the opinion of Yu. M. Ivanov, "...amortization has become the same kind of basic source of further growth in capital investments as the added product was previously."[5] In order to substantiate this conclusion they give data concerning the increased proportion of amortization deductions in capital investments.

Indeed, the proportion of amortization deductions in capital investments has increased significantly: from 33 percent in 1965 to 58.5 percent in 1982, and this increase is even greater if one keeps in mind the utilization of these deductions for renovation: from 16 percent to 35 percent (see Table 2).

Table 2. Ratio Between Amortization Deductions and Capital Investments in USSR National Economy*

	1965	1970	1975	1980	1982
Capital investments, billions of rubles	56.0	80.6	112.9	133.7	143.7
Amortization deductions, billions of rubles	18.8	29.1	49.9	72.7	84.1
Including for renovation	9.2	14.4	28.9	43.1	50.3
Ratio between amortization deductions and volume of capital investments, %	33	36	44	54	58.5
Ratio between amortization deductions for renovation and volume of capital investments, %	16	17	25	31	35

* Calculated from: "USSR National Economy, 1922-1982," Moscow, 1982, pp 365, 560; "USSR National Economy in 1982," pp 339, 519.

But with these figures alone it is still difficult to make an exhaustive judgment of the transformation of the amortization fund into a source of expanded reproduction. The increase in the proportion of amortization deductions in capital investments in recent years has apparently been brought about by the larger role of simple reproduction and the lower rates of growth of capital investments. It seems that when solving the problem under condideration it is necessary to concentrate most of our attention on the

following ratios: first, the ratio between the parts of the amortization fund which are used for renovation and for capital repair; second, on the initial and replacement value of fixed production capital; and third, on the consumer value of the restored and existing capital.

The amortization fund is used to replace fixed production capital either through replacement of worn-out means of labor with new ones or through repair and prolongation of the period of serviceable machines. During the past 12 years the proportion of amortization deductions for capital repair in the overall sum of amortization decreased from 51 to 40 percent, and for renovation it increased from 49 to 60 percent.[6] Amortization deductions for capital repair serve for partial replacement of fixed production capital. Under the conditions of intensive reproduction, this proportion of the amortization fund can serve as a source of expanded reproduction if the capital repair is accompanied by modernization of the means of labor and is carried out on a high technical level. This is a reserve for intensifying simple reproduction of fixed capital which is not being fully utilized so far. Many enterprises carry out capital repair jobs through their own forces, in a primitive way, and during the course of this repair the initial capacity of the machine tools, machines and equipment are not always restored. Thus in machine building the proportion of manual repair work reaches 73 percent, a 2.5-3-fold jump over the level in basic production, and the period of service of machines after capital repair is almost 25 percent less than is in envisioned.[7] This shows that we have not yet reached an optimal ratio between capital repair and renovation, that there are reserves for a more effective utilization of funds that are allotted for these purposes. The effectiveness of capital repair increases with the development of specialization of repair work and centralization of the production of spare parts, and also as a result of the increased durability of basic parts and components. All this makes it possible to use more funds for complete replacement of fixed capital and to accelerate their renovation.

This acceleration is becoming especially crucial at the present time since there is still a good deal of outdated technical equipment functioning in the USSR national economy and it is not being withdrawn on an adequate scale. Thus the coefficients of the withdrawal of fixed capital in industry in recent years have not exceeded 1.5 percent, and for machines and equipment -- 2.5 percent.[8] Therefore, in our opinion, the amortization fund should be utilized to an ever greater degree for the replacement of outdated means of labor with new ones. Renovation is the main form of simple reproduction of means of labor, but it should also become a form of their expanded reproduction. The question of the degree to which renovation provides for simple reproduction of funds and the degree to which it provides for their expansion has not been sufficiently investigated in economic literature.

The possibilities of utilizing the amortization fund under the concrete conditions of socialist activity as a source of simple and expanded reproduction depend, in our opinion, on what means of labor will be used to replace fixed production capital in physical terms, and on the ratio between the initial and the restored value of the means of labor.

The replacement of fixed production capital in physical terms is a very complicated and multifaceted process. It can be divided into two basic forms. With the first of them the old elements of the capital that have become unsuitable are replaced with the same quantity of means of labor which are no different from the old ones in terms of their technical and operational qualities. In this case there is a change in the age and structure of the fixed capital, but its technical level remains the same. With this form there is no or almost no increase in the economic effectiveness of the existing means of labor. The amortization fund is used here for simple reproduction.

The second, more modern, form of replacement of fixed production capital in physical terms is a renovation of them whereby elements of capital which have become unsuitable are replaced by the same quantity of new means of labor which are technically better. With this form of replacement the capacity of the production apparatus increases and its age changes. But the most important thing is that the technical level becomes higher. The introduction into the production process of means of labor that are better in terms of their technical and production parameters provides, in addition to a savings on embodied labor, a savings on live labor, and it increases the degree of effectiveness of capital investments. With the given form of replacement, this increase is achieved not only because of the reduction of capital investments per unit of capacity, but also because of the reduction of operational expenditures and savings on live labor. Thus this form can be characterized as having a basic direction of carrying out the intensive type of simple and partially expanded reproduction of fixed capital.

The ratio between these forms of replacement of fixed production capital differs in various periods of development of the economy. Thus the first form of replacement of capital is more inherent in the extensive type of reproduction, and the second form--in the intensive type. Therefore the possibilities of utilizing the amortization fund as a source of expanded reproduction differ also, and they are increasing in the modern stage. In this connection it is important to determine how the consumer value of the reproduced means of labor changes. But such a generalizing evaluation is hardly possible and we almost never encounter such evaluations in literature. One can only gain an approximate idea of the relative characteristic of the consumer value of worn-out and replaced capital. Thus, according to data of the State Committee for Prices, newly introduced and modernized capital is only 10-20 percent more productive than old capital, instead of the 1.5-2-fold increase that would be required.[9] This means that as a result of introducing new, improved means of labor and modernizing existing means of labor, the productivity and periods of service of all existing fixed capital increases by only 0.8-1.6 percent while the required level is 4-8 percent. This change in the consumer value of fixed production capital, with its former cost, makes it possible to presume that the amortization fund in this case acts mainly as a source of simple reproduction.

But if the worn-out means of labor are replaced with new ones which cost less (but whose technical and production indicators are the same or higher) the amortization fund can serve as a source not only of simple, but also of expanded reproduction. But transforming the possibilities of utilizing the amortization fund for accumulation into a reality is limited by the fact that

at the present time the new means of labor are frequently not only more productive, but also more expensive (per unit of useful effect). For example, with technical re-equipment of enterprises of our light industry, BD-200 machines were installed to replace the P-76-2 cotton-spinning machines, with a 9-fold increase in price and only a 1.6-fold increase in productivity over the old machines.[10] In other productions as well the prices of the new technical equipment are not always justified. Thus the ATPR-100-2U loom costs 4 times as much as the AT-100-5M, with only a 1.5-fold increase in productivity. These are not the only cases: the system of price setting for the elements of fixed production capital which is presently in existence does not always take into account the increase in the effectiveness of the new technical equipment. Therefore the practice of setting prices, in our opinion, should be improved in the direction of better taking into account the dynamics of the value of each unit of useful effect in the price for fixed production capital.

The possibility of expanded reproduction of fixed production capital through amortization deductions is also conditioned by their replacement in terms of value. They are made periodically, but the replacement of means of labor in physical terms is carried out upon the expiration of a more or less lengthy period, and not after each production cycle. The initial capacity of the means of labor practically does not change throughout the entire length of its service.[11] As K. Marx wrote, "these free services of past labor, embraced and enlivened with live labor, are accumulated with an increase in the scale of accumulation."[12] Therefore the amortization fund can be temporarily utilized as an additional financial reserve. Such utilization of it is determined by the time of circulation of fixed production capital and the need for actual provision of the amortization fund with new means of labor.

Let us note that the possibility of utilizing the amortization fund for expanded reproduction exists not only for funds that are intended for complete replacement of means of labor (renovation), but also for that part of the amortization deduction which is to be used for partial replacement of the means of labor (capital repair).

The possibility of the utilization of the amortization fund for expanded reproduction is conditioned by the fact that, as a result of scientific and technical progress, during the period of service of fixed capital the amount of value necessary for replacing it under the new conditions decreases. The difference between the amount of its initial value and the value for replacing it is also an additional source of expanded reproduction of fixed capital through the amortization fund. The theoretical possibility of utilizing the amortization fund for accumulation thus presupposes the existence of certain prerequisites, and first and foremost accelerated introduction into production of the achievements of scientific and technical progress. Otherwise there arise factors which counteract the intensive utilization of the fund for replacement of fixed production capital. Because of a number of reasons, both objective and subjective, for a fairly long period of time these factors caused a tendency toward increase in the replacement value of fixed production capital as compared to the initial value (see Table 3).

Table 3. Movement of Replacement Costs of Fixed Capital According to Data on Its Revaluation in USSR*

	As of 1 Jan 1925	As of 1 Jan 1960	As of 1 Jan 1972
Replacement cost, billions of rubles	5.7	200.1	721.5
Initial cost, billions of rubles	5.2	175.3	622.1
Increase of replacement cost as compared to initial cost			
In billions of rubles	0.5	24.8	79.4
In percent	8	12.4	11

* Calculated from: "USSR National Economy in 1959," Moscow, 1960, p 73; "USSR National Economy in 1972," Moscow, 1973, p 63; EKONOMICHESKIYE NAUKI, No 7, 1981, p 105.

Here we should like to draw attention to the fact that, according to data from the latest revaluation, the replacement cost of fixed capital exceeded the initial cost by 79.4 billion rubles. This is 2.24 times greater than the amortization deductions for this year (35.3 billion rubles).[13]

Thus the replacement cost of fixed capital increased as compared to its initial cost, and the amortization fund turned out to be inadequate even for simple reproduction of fixed capital. An analysis of the change in the amount of production costs under the 10th Five-Year Plan makes it possible to presume that the replacement cost of fixed production capital has certainly not decreased in recent years. In such cases the possibility of utilizing the amortization fund as a source of expanded reproduction are limited.

And so, when analyzing the problem of the utilization of the amortization fund under the conditions of intensification of socialist public production, it is necessary to take into account a number of circumstances that ensue from its nature as an economic phenomenon. The amortization fund, being in its economic essence a replacement fund (that is, a fund for simple reproduction), can also be used for expanded reproduction. This possibility was envisioned even in the classics of Marxism-Leninism. With a certain optimal ratio between the two parts of the amortization fund--for renovation and for capital repair--under the conditions of intensification of public production, preference should be given to the fund for renovation, and it is expedient to use the funds intended for capital repair in order to conduct capital repair along with technical improvement and modernization.

The possibility of utilizing the amortization fund for expanded reproduction should be coordinated with the development of subdivision I of public production, especially production of implements of labor. This is conditioned by the fact that there are two sides to the process of replacement of capital: replacement in physical terms and replacement in terms of value. It is necessary not only for the replacement of fixed production capital in physical form not to lag behind its replacement in value, but even to surpass it.

Production in subdivision I should develop in such a way that by the time that fixed capital is withdrawn there is a sufficient quantity of new elements of it, and it should be technically more advanced. It is often necessary to achieve a reduction of the replacement cost of fixed production capital on the basis of increased labor productivity and the introduction of scientific and technical progress into subdivision I of public production.

Among the factors that influence the intensification of the utilization of the amortization fund, a special position is occupied by questions of setting prices for new technical equipment. The possibility of utilizing the amortization fund for expanded reproduction depends on how completely and precisely one observes the principles of scientifically substantiated socialist price setting, and above all on the observance of the principle of reduction of prices per unit of useful effect of capital.

FOOTNOTES

1. See: "USSR National Economy in 1982," Moscow, 1983, pp 45, 378, 519.

2. See: N. F. Shatilov, "Analiz Zavisimostey Sotsialisticheskogo Vosproizvodstva i Opyt Yego Modelirovaniya" [Analysis of Dependencies in Socialist Reproduction and Experience in Modeling Them], Novosibirsk, 1974, pp 43-64; P. G. Ryl'kov, "Intensifikatsiya Vosproizvodstva Novoy Tekhniki" [Intensification of Reproduction of New Technical Equipment], Moscow, 1980, pp 128-137; S. V. Belova, "Fond Vozmeshcheniya Sredstv Truda i Dinamika I Podrazdeleniya" [The Fund for Reimbursement of Means of Labor and the Dynamics of Subdivision I], Moscow, 1977, pp 67-96; A. V. Sidorovich, "Fond Vozmeshcheniya Pri Sotsializme" [The Reimbursement Fund Under Socialism], Moscow, 1978, pp 94-95; Yu. M. Ivanov, "Sootnosheniye Ekstensivnykh i Intensivnykh Protsessov v Rasshirennom Vosproizvodstve" [The Ratio Between Extensive and Intensive Processes in Expanded Reproduction], Moscow, 1980, pp 118, 120.

3. See: K. Marx, F. Engels, "Soch." [Works], 2nd ed., Vol 24, pp 193, 199; Vol 26, part II, p 534; Vol 30, p 231; Vol 31, pp 279-283.

4. A. V. Sidorovich, "Fond Vozmeshcheniya Pri Sotsializme," op. cit., pp 94-95.

5. Yu. M. Ivanov, "Sootnosheniye Ekstensivnykh i Intensivnykh Protsessov v Rasshirennom Vosproizvodstve," Moscow, 1980, p 118.

6. See: "USSR National Economy in 1982," p 519.

7. See: KOMMUNIST, No 9, 1977, p 45.

8. See: EKONOMICHESKIYE NAUKI, No 1, 1983, p 23.

9. See: PLANOVOYE KHOZYAYSTVO, No 6, 1980, p 4.

10. See: P. G. Ryl'kov, "Intensifikatsiya Vosproizvodstra Novoy Tekhniki," Moscow, 1980, p 135.

11. See: K. Marx, F. Engels, "Soch.," 2nd edition, Vol 26, part II, pp 534-535.

12. Ibid., Vol 23, p 622.

13. See: "USSR National Economy in 1975," Moscow, 1976, p 741.

Calculating, Utilizing Amortization Fund

Moscow EKONOMICHESKIYE NAUKI in Russian No 7, Jul 84 pp 48-55

[Article by P. Myagkov, candidate of economic sciences: "Several Problems in Calculating and Utilizing the Amortization Fund"]

[Text] The 26th CPSU Congress singled out as one of the main tasks facing the country's industry the need "to reduce the cost of industrial products and to increase their profitability."[1] Amortization deductions, as we know, constitute an important constituent element of the production cost of products. The scientific substantiation of norms for amortization deductions for renovation and capital repair of means of labor[2] and efficient utilization of the fund that is formed this way are indispensible conditions for effective functioning of the socialist economy.

At the same time, in economic literature they have not yet reached a unanimity of opinions regarding such fundamental issues as the concept of consumer value of means of labor; the main laws in the transfer of the cost of technical equipment to the product under the effects of physical deterioration and obsolescence; the means of calculating amortization which reflects most fully the wear and tear on means of labor; or the areas for the utilization of amortization deductions. Therefore it seems necessary to analyze in greater detail the problems that have been touched upon.

First of all, let us consider the problems related to amortization deductions for complete restoration of means of labor.[3]

It is known that the transfer of the value of means of labor to the products that are created with them is based on a loss of their consumer value. K. Marx pointed out that "...the value, leaving aside the purely symbolic expression in the token value, exists only in one consumer value or another, in one thing or another.... Therefore if one forfeits the consumer value, one also forfeits the value in general."[4]

In economic literature one encounters various definitions of the consumer value of implements of labor. Certain authors define it only through indicators of productivity, the precision of processing and other technical characteristics, that is, they devote most of their attention to a consideration of the physical and substantial parameters of means of labor.[5] Other economists see the consumer value of means of labor only in the possibility of saving on public labor per unit of output.[6]

But means of labor in the sphere of their productive utilization serve to satisfy the needs of society through the participation in the creation of the consumer value of products and also in the formation of the overall value. Consequently, the consumer value of means of labor is a unity of two aspects: first, means of labor act as implements and conditions for the creation of products that are necessary to the society; second, they have the capability of saving the necessary amounts of social labor.[7]

As a result of the dual nature of the consumer value of means of labor, the loss of it also takes place in two directions. The loss of the consumer value of means of labor as implements and conditions of labor takes place under the influence and to the degree of their physical wear and tear; and the loss of the ability of means of labor to save social labor as the result of their economic aging, that is, it takes place under the influence and to the degree of the obsolescence of means of labor. This, in turn, presupposes a dual loss of value of means of labor. Here not all of the value lost by the means of labor can be transferred to the products that are produced.[8] This is determined by the kind of deterioration to which the means of labor are subjected.

Under the influence of the first kind of physical deterioration, the value of the means of labor is lost in combination with their consumer value and at the same time it is embodied in a new physical and substantial form. This process of transferring the value of means of labor to the products that are produced lies at the basis of the reservation and movement of their value. Under the influence of the second kind of physical deterioration, the lost value does not assume a new form of existence, is not preserved and is irreversibly lost to the society. With a loss of the consumer value of the means of labor (the ability to save live and embodied labor in socially necessary amounts (under the influence of obsolescence of the first and second kind, the lost value of means of labor is not transferred to the product since this loss is the result of a change in the level of socially necessary expenditures of labor on the production of the given means of labor or on the creation of similar products with the help of new means of labor under modern conditions.

The norm for the transfer of the value of the means of labor to the products that are produced is determined only in the degree of their physical deterioration of the first kind. And the absolute amount of transferred value of means of labor can be periodically reduced because of obsolescence of the first and second kind with an unchanged norm for the transfer of that value, which is completely determined by physical deterioration.

The loss of consumer value by means of labor and the transfer of the general value of the means of labor to the created product (despite the differences in the way this occurs to the degree of physical deterioration and depending on the obsolescence) are closely interrelated and are a unity of opposites.

The absolute amount of the general value of the means of labor that is transferred to the product with an unchanged norm for their deterioration decreases (all other conditions being equal) only with the reduction of the value of the means of labor under the influence of obsolescence. Then the reduced amount of the transferred value, like the previous amount of the

general value, will be the socially necessary value under certain conditions of public production. Consequently, the means of labor lose their value during the course of the entire period of service gradually, uniformly and in the socially necessary amount. One can add the means of labor to the product of labor only in the amount of that value which is equal to the actual value, and under the conditions of the effects of obsolescence of means of labor--an amount which is less than the initial value of the means of labor.[9]

The unity of the general value and the consumer value of the means of labor and the laws for the loss of these properties by the latter under the influence of physical deterioration and obsolescence lie at the basis of the movement and preservation of the value by means of changing the forms of its existence.

The process of the movement of value of means of labor transferred to the creative product which has been under consideration is reflected in the process of management by means of calculating amortization, which, as we know, is the monetary form of expression of the deterioration of means of labor.

Complete reimbursement of expenditures of social labor on drawing means of labor into the process of production can be provided only under the conditions of observance of the requirements of the law of value, according to which the amount of the amortization deductions should correspond to the amount of deterioration of the means of labor in the sphere of production. The interconnection between the deterioration of means of labor and amortization expressed in monetary form is not as clear as the connection between the value of the product and the price. This takes place as a result of the fact that the value transferred from the means of labor constitutes only a part of the overall amount of value of the created product. Consequently, the law of value with respect to individual parts of value (particularly the deterioration of means of labor) is manifested in a less rigid form than it is when it comes to the entire amount of the value of the product. It is known that this law allows for the price to deviate from the value of the product at the level of individual specimens, but in the society as a whole the sum of prices of all commodities should be equal to the sum of their values. But if one considers the interconnection between deterioration as a part of the value of the product and amortization as a part of the price of this product, the amortization deductions can deviate from the social amount of deterioration, and for individual kinds of products, even at the level of the society as a whole. This takes place as a result of the change in the amount of the other constituent parts of the price (for example, profit) in favor of amortization deductions. It is important to take into account that the law of value not only presupposes an equality of the sums of prices of all goods and their values, but is also based on a mandatory equality at the level of the national economy of each individual constituent part of the value of the entire product (including the deterioration of the means of labor) on the one hand, and the monetary form of its expression (corresponding to the amortization of means of labor), on the other.

In violation of the aforementioned requirements of the law of value, certain of our economists consider it possible to eliminate losses from obsolescence through increased norms for amortization deductions and accelerated

accumulation of the monetary sum in the amortization fund by the time the means of labor become obsolete so that it is equal to the initial value of these means of labor,[10] which, it is our conviction, is theoretically unjustified.

With the first and second kind of obsolescence, the total amount of value of the entire product of society (including machines and equipment) is reduced by the amount of the value lost by means of labor under the influence of their obsolescence. The value of the total social product in the sphere of circulation which is reduced in the sphere of production can be only redistributed, and can in no way be increased. Consequently, if the norm of amortization deductions is set at a higher level than the physical time period for the service of the means of labor, the surplus accumulated in the monetary sum in the amortization fund will be nothing other than the amortization part of the created added product which is redistributed into the amortization fund. Thus one does not make up for losses from the obsolescence of the means of labor.

The physical period of service of means of labor, which is the basis for determining the norm for amortization deductions, does not change under the influence of obsolescence: the technical equipment can be economically ineffective, but physically suitable for use. The durability of a substance, which determines the physical period of service of the implements of labor, like its other useful property, is a product of labor. Consequently, the unconsumed part of the useful properties of means of labor, like the consumed part, embodies a certain quantity of value. If during the course of a certain time interval (shorter than the physical period of service of the means of labor) a monetary sum is accumulated in the amortization fund which is equal to the initial value of the means of labor, this does not mean that the means of labor have transferred all of their value to the created product. Some of the useful properties of the means of labor remain unutilized, and the corresponding part of the value of the means of labor is not transferred to the product. If the means of labor which have lost their ability to save the necessary amounts of public labor because of obsolescence are not consumed productively, the untransferred part of the value of the means of labor ends up being irreversibly lost to the society under the influence of the second kind of physical deterioration.

Elements of the value of the total social product have a particular economic meaning and purpose in strictly designated areas for utilization. Quantitative changes in these ratios entail certain qualitative changes.

Attention is drawn first of all to the fact that an unjustified increase in amortization deductions has as an inevitable consequence a reduction of the created national income by the corresponding amount. As a result of this, there is not only a quantitative change in the structure of the global social product, which reflects a lowered level of effectiveness of public production than actually exists, but also less favorable prerequisites are created for the subsequent development of public production.

The main area for the utilization of amortization deductions for renovation is payment for the replacement of physically worn-out means of labor which have

been withdrawn from the sphere of production with new ones--as a rule, to carry out the same production operations. Some of the temporarily free money from the amortization fund can be used as an additional source of financing state capital investments which provide for expanded socialist reproduction. But this should be done only after the amortization fund has fulfilled its basic purpose--replacement of worn-out means of labor.

As the practice of management shows, even after the replacement of physically worn-out means of labor with new and more expensive technical equipment, there remain considerable amounts of free money from the amortization fund which are used as an additional source for expanded social reproduction. Thus it is now difficult to call the amortization fund an additional source of financing of state capital investments. The proportion of amortization deductions in the overall mass of capital investments in the 1981 plan amounted to 28.4 percent,[11] that is, it was actually a source which was second only to allocations from the budget.[12].

Thus increased norms for amortization deductions can serve as a means for redistributing considerable amounts of money from the created additional product into the replacement fund while the funds should be used for increasing public consumption, and partially for expansion of public production. With increased amortization norms the level of well-being of the society is artificially lowered.

Moreover, it is important to note that the society's losses from obsolescence of the first and second kind are not inevitable. Strict correspondence between the physical period of service of means of labor and the time of their obsolescence on the basis of scientifically substantiated long-range prognostication and planning of the introduction of new technical equipment and technology into the national economy is a guarantee of effective updating of fixed production capital.

As was pointed out above, amortization deductions reflect in monetary form not only the movement of value of means of labor which is transferred to the created product as they lose their consumer value, but also the amount of expenditures of labor necessary for restoring their consumer value in the sphere of productive utilization, that is, expenditures on capital repair.[13]

The need to carry out capital repair of means of labor[14] under modern conditions is obvious. But in economic literature one encounters various interpretations of the reasons for conducting capital repair and the conditions under which there is no longer a need to carry out this repair. Thus Yu. I. Lyubimtsov, referring to these problems, notes that "capital repair will for a long time still be a necessary form of replacement of fixed capital. This is brought about by the fact that the means of labor that are produced annually are limited...this also conditions the need for capital repair as a form of intermediate (partial) replacement of fixed capital."[15] If one follows this logic, with the production of a sufficient quantity of means of labor which are necessary for replacing worn-out technical equipment, there would be no need to carry out capital repair. Such a position seems incorrect.

The physical deterioration, whose consequences capital repair is intended to eliminate, takes place irregularly not only for various means of labor, but also with respect to the individual machine. Parts and components of means of labor, as a rule, are manufactured from various materials and perform different operations, and as a result of this they are subject to varying degrees of deterioration. The replacement of the worn-out components and aggregates makes it possible, with relatively small expenditures of labor, to continue to operate the means of labor with economic effectiveness, even when new technical equipment is not being produced in a sufficient volume. It seems that the necessity for capital repair is conditioned not by the limited nature of the volume of production of means of production, but by the lack of uniformity of the physical deterioration of individual parts and components of the technical equipment. As long as this peculiarity of physical deterioration exists, even if the shortage of means of labor is eliminated, capital repair will continue to be a significant and effective means of restoring the consumer value of means of labor.

Certain economists, when determining the economic effectiveness of capital repair, compare expenditures on it with the value of the implements of labor intended for replacing the worn-out technical equipment. If the expenditures on repair exceed the cost of new equipment, it is recognized as inexpedient.[16] Because of a number of reasons, this methodological approach cannot be recognized as theoretically sufficiently justified. Let us discuss this issue in greater detail.

Expenditures on the manufacture of new technical equipment and expenditures on the repair of means of labor, along with their common features, also have significant differences which are brought about primarily by the fact that the former are carried out in the sphere of production of means of labor, and the latter--in the sphere of productive utilization of means of labor. Expenditures on the creation of means of labor constitute the substance of the value of technical equipment. Expenditures on the repair of equipment are only additional expenditures on restoring the consumer value of means of labor and preserving their ability to operate without bringing about any changes in the value of the technical equipment. Because of the fact that such expenditures are inevitable for the society there arises a need to include them in the value of the products that is created with the help of repaired means of labor--in the form of amortization deductions for capital repair. Thus the total amount of the value that is transferred to the product increases.

It is further necessary to take into account that while expenditures must be made on the creation of means of labor, it is possible to avoid making expenditures on the repair of individual equipment throughout the entire period of its service.

In addition to the aforementioned differences between the two kinds of expenditures, the similar nature of their transfer to the created product determines their common features. This transfer is carried out uniformly, in socially necessary amounts, and in keeping with the physical deterioration of the means of labor. Expenditures on capital repair, although they are carried out periodically, are included in the price of the commodities permanently and

uniformly. The transferred amount of the value, regardless of the source of its formation, is always determined by socially necessary conditions which, as a rule, remain unchanged for a prolonged period of time.[17] Consequently, "...the increment to the price of goods which is determined in taking into account both the deterioration and the expenditures on repair, is the same: it is determined according to an average amount."[18]

But the similarity of the transfers of expenditures of labor to the products does not make it possible either to equate expenditures on capital repair and expenditures on the creation of means of labor or to compare them. These expenditures have different economic meanings: some provide for the creation of useful properties of technical equipment while others are directed toward the restoration of properties of means of labor that are lost during the course of production consumption. Thus the final goal of capital repair is to restore the consumer value of means of labor or, in other words, to recreate their capability of producing socially necessary products and, moreover, to save on social labor in the necessary, socially normal amounts. Therefore the criterion for the effectiveness of capital repair cannot be a comparison of expenditures on conducting it and expenditures on the creation of new analogous means of labor.

The repaired means of labor should have the same properties as those found in the majority of analogous means of labor used in production. If after repair the technical equipment provides for the creation of the socially necessary quality and quantity of products and transfers to each unit of items expenditures that are equal to the socially necessary ones (that is, expenditures transferred during the production of the majority of the given kind of products), the repair is economically expedient, regardless of the ratio between the expenditures required for it and those necessary for the reproduction of the given means of labor under the existing conditions. Consequently, capital repair can become economically inexpedient long before the time when expenditures on the repair of technical equipment exceed the price of the new equipment that is intended to replace it. Carrying out capital repair beyond the limits of economic effectiveness inevitably leads to an unjustified increase in the production cost as a result of the excessive growth of expenditures on repair.

At the same time, expenditures on the creation of means of labor and their subsequent repair are closely interconnected. Extremely high labor expenditures on repair of means of labor, as a rule, are the result of shortcomings in the sphere of production of technical equipment (under conditions whereby the quantity of means of labor that is manufactured is insufficient to replace physically worn-out equipment). An important and essential reserve for reducing expenditures on capital repair is improvement of the technology for the manufacture of equipment and a higher level of organization of labor used during this period. An insignificant increase in the expenditures of labor in the sphere of production of technical equipment can provide for an essential reduction of outlays on its repair in the sphere of operations.

The efficiency of the utilization of money from the amortization fund for capital repair can also exert an influence on the reduction of the production cost of the products that are created. Thus, in keeping with the established practice in the provisions concerning the policy for planning, deducting and utilizing amortization deductions in the national economy, it is permitted to use money from the amortization fund for capital repair for new technical equipment to replace old equipment and that which is physically worn-out in the event that capital repair is economically inexpedient.[19]

Money from the amortization fund for renovation is not interchangeable with that for capital repair. The utilization of money from the amortization fund for capital repair in order to replace worn-out means of labor with new ones leads to an unjustified increase in public expenditures on the creation of products which are produced with these means of labor. With the socially necessary norm for amortization for renovation, by the end of the period of service of the means of labor a sum should have been accumulated in the amortization fund which is sufficient for acquiring new means of labor to replace the worn-out means. Here the replacement of the physical and substantial form of the existence of the value of means of labor, having been turned around, with new means of labor does not change the amount of the value transferred to each unit of products produced the difference in the conditions for production with the old or with new means of labor consists only in that the value which was previously embodied in certain means of labor, having been turned around, has now been embodied in new means of labor and the next turnover is carried out. In other words, money accumulated in the amortization fund for renovation reflects the movement of the value once advanced by the society which periodically changes its productive form of existence and does not require additional public expenditures.

Under the conditions of the replacement of physically worn-out means of labor with new ones using money from the amortization fund for renovation, with no changes in the expenditures for the reproduction of the given means of labor, the cost of the products created with the new technical equipment, all other conditions being equal, remains the same, since the amount of the amortization deductions for renovation and for capital repair are at the socially necessary level and need not change. But if the worn-out technical equipment is replaced using money from the amortization fund for capital repair, then the expenditures on the production of products for which the new technical equipment is used should include, in addition to the unchanged amount of amortization for renovation, deductions for capital repair which are increased, taking into account the value of the new means of labor acquired with money from the fund.[20]

When it is inexpedient to repair physically worn-out technical equipment, it should be replaced with new technical equipment only with money from the amortization fund for renovation. The existence of surplus accumulated money in the amortization fund for capital repair, which can be used for other needs, obviously, shows an increase in the corresponding amortization norms. There arises a need, with the next revision of the amortization norms for capital repair, to reduce them within the necessary limits, and to deposit the surplus accumulated amortization sum into the profit.

The justification for this kind of payment for the replacement of worn-out technical equipment with new equipment (when capital repair is inexpedient) is the more obvious when a significant part of the money from the amortization fund for renovation is used as a source of financing state capital investments, which is a secondary area for its application. In this case, all other conditions being equal, the production cost will not be increased.

Each source of financing work has a strictly determined economic meaning and, in keeping with this, an area for utilization. The expenditure of public resources which does not correspond to their economic purpose entails undesirable economic consequences and a reduction of the effectiveness of public production.

FOOTNOTES

1. "Materials of the 26th CPSU Congress," Moscow, 1981, p 148.

2. When speaking about means of labor we have in mind primarily implements of labor as the most revolutionary element of them, mainly those which provide for the introduction of the achievements of scientific and technical progress.

3. Henceforth, instead of "amortization deductions for complete restoration of means of labor" we shall use the terms" amortization deductions" and "amortization."

4. K. Marx, F. Engels, "Soch.," 2nd ed., Vol 23, pp 213-214.

5. See: D. M. Palterovich, "Osnovnyye Fondy Intensifikatsiya Ispol'zovaniya i Obnovleniya" [Fixed Capital. Intensification of Utilization and Renovation], Moscow, 1974, p 6; A. V. Sidorovich, "Fond Vozmeshcheniya Pri Sotsilizme" [The Replacement Fund Under Socialism], Moscow, 1978, p 16; and others.

6. See: P. G. Ryl'kov, "Effektivnost' Obnovleniya Tekhniki. Voprosy Teorii i Praktiki" [The Effectiveness of Renovation of Technical Equipment. Questions of Theory and Practice], Moscow, 1977, p 166.

7. Thus A. S. Palamarchuk notes that "as means of labor are utilized, as we know, they lose their usefulness and their ability to satisfy needs in the production of products and economy of labor expenditures" (A. S. Palamarchuk, "Effektivnost' Rekonstruktsii Predpriyatiy" [The Effectiveness of the Reconstruction of Enterprises], Moscow, 1978, p 39]. Similar definitions of consumer value of means of labor are given in the following works: L. M. Gatovskiy, "Nayuchno-Tekhnicheskiy Progress i Ekonomika Razvitogo Sotsializma. Ocherki Politicheskoy Ekonomii" [Scientific and Technical Progress and the Economy of Developed Socialism. Essays in Political Economics], Moscow, 1974, pp 89, 278; V. B. Ivashkevich, "Uchet i Analiz Zatrat na Modernizatsiyu Oborudovaniya" [Accounting For and Analyzing Expenditures on Moderning Equipment], Moscow, 1970, p 5; and others. But these economists limit themselves to a

definition of the consumer value of the means of labor without considering the close interconnection between the duality of the consumer value of means of labor and the nature and laws of the loss of their value under the influence of physical deterioration and obsolescence.

8. A number of economists think that the amortization times and, consequently, also the norms for amortization are determined not only by the phsyical deterioration, but also by the obsolescence of means of labor. In the opinion of the authors, accelerated deduction of amortization prevents losses from obsolescence of the second kind (see, for example: Yu. Yakovets, "The Absolute and Relative Reduction of Costs of Machines," VOPROSY EKONOMIKI, No 10, 1978, p 38; A. L. Gaponenko, "Moral'nyy Iznos i Obnovleniye Orudiy Truda" [Obsolescence and Renovation of Implements of Labor], Moscow, 1980, p 108; and others).

9. K. Marx, when analyzing the movement of permanet capital, noted that "the means of production can never add to the product a value that is greater than the one which it would have regardless of the process of labor it serves" (K. Marx, F. Engels, "Soch.," 2nd ed., Vol 23, p 217).

10. See, for example: V. Yu. Budavey, "Problemy Obnovleniya i Amortizatsii Osnovnykh Fondov v Usloviyakh Intensifikatsii Proizvodstva" [Problems of Renovation and Amortization of Fixed Capital Under the Conditions of Intensification of Production], Moscow, 1972, pp 9, 12; Yu. Yakovets, "Absolute and Relative Reduction of Costs of Machines," VOPROSY EKONOMIKI, No 10, 1978, p 38; and others.

11. See: N. N. Kirillov, M. Kh. Lapidus, "Sovershenstvovaniye Finansovo-Kreditnykh Otnosheniy v Stroitel'stve. Voprosy Teorii i Praktiki" [Improvement of Finance and Credit Relations in Construction. Questions of Theory and Practice], Moscow, 1981, p 33.

12. According to the calculations of A. V. Sidorovich, the proportion of the amortization fund in capital investments in 1976 amounted to 28 percent, while in 1960 it was equal to only 6.9 percent (see: A. V. Sidorovich, "Fond Vozmeshcheniya Pri Sotsializme," Moscow, 1978, p 95); A. D. Ayushiyev and V. P. Ivanitskiy think that in 1977 the proportion of amortization deductions was at the level of 24.6 percent (see: A. D. Ayushiyev, V. P. Ivanitskiy, "Sources of Financing Capital Investments," FINANSY SSSR, No 6, 1978, p 37).

13. According to the data of S. Pokropivnyy, metal-cutting machines undergo four to five capital repairs during their period of service. (See: S. Pokropivnyy, "Increasing the Effectiveness of the Repair of Industrial Equipment," VOPROSY EKONOMIKI, 1978, No 2, p 40).

14. Henceforth by repair we shall mean only capital repair.

15. Yu. I. Lyubimtsev, "Tsikl Vosproizvodstva i Amortizatsii Osnovnykh Fondov. Voprosy Teorii i Metodologii" [The Cycle of Reproduction and Amortization of Fixed Capital. Question of Theory and Methodology], Moscow, 1973, p 58.

16. See, for example: M. S. Sachko, I. M. Babuk, "Ekonomika Zameny Mashin i Oborudovaniya" [Economics of Replacement of Machines and Equipment], Moscow, 1974, p 50; V. F. Spirin, "The Need and Conditions for Replacement of Obsolete Equipment," in the collection: "Optimal'nyye Sroki Sluzhby i Ekonomicheskaya Effektivnost' Remonta Mashin i Oborudovaniya" [Optimal Time Periods for Service and Economic Effectiveness of Repair of Machines and Equipment], Minsk, 1971, p 35; and others.

17. K. Marx noted that under the conditions of capitalism "...the value ascribed to the fixed capital, because of the added expenditure of capital and labor, cannot be included in the price of the commodities along with this expenditure" (K. Marx, F. Engels, "Soch.," 2nd ed., Vol 24, p 197). This methodological point retains its significance under the conditions of the socialist economy as well.

18. K. Marx, F. Engels, "Soch.," 2nd ed., Vol 24, p 200.

19. See: "Normy Amortizatsionnykh Otchisleniy po Osnovnym Fondam Narodnogo Khozyaystva SSSR i Polozheniye o Poryadke Planirovaniya, Nachisleniya i Ispol'zovaniya Amortizatsionnykh Otchisleniy v Narodnom Khozyaystve" [Norms for Amortization Deductions for Fixed Capital in the USSR National Economy and Provisions Concerning the Policy for Planning, Deduction and Utilization of Amortization Deductions in the National Economy], Moscow, 1974, p 129.

20. As we know, norms for amortization for capital repair are unchanged during a certain period of time. The utilization of money from a given fund for the acquisition of new means of labor will, during the regular revision, stimulate an increase in the norm for amortization for capital repair, which will also lead to an unjustified increase in the production cost of the products.

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STRONGER ENVIRONMENTAL MEASURES ADVOCATED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 8, Aug 84 pp 25-32

[Article by P. Poletayev, deputy chairman of the Commission for Protection of the Environment and Rational Utilization of Natural Resources of the USSR Council of Ministers: "Development of Measures for Protection of Nature"]

[Text] Protection of nature and creation of a most optimal environment is considered in the USSR as a very important social-economic task, on the successful solution of which the well-being of the Soviet people largely depends.

On the basis of the economic strategy of the CPSU and the chief objective of the 11th Five-Year Plan, rational utilization and reproduction of natural resources in the first 3 years of the current five year plan have involved the spending ofabout 24 billion rubles on the protection of the earth and its mineral resources, the atmosphere, water bodies and the animal and vegetable kingdom. This is about 1.5 fold more than during the first 3 years of the past five-year plan.

In our country, despite growth of industry and agricultural production and also further development of municipal services, the discharge of polluted waste water into open water bodies has been significantly reduced, emission of harmful substances into the atmosphere from fixed sources has been diminished. A great deal of work has been done on protection and rational utilization of mineral and earth resources and the wild animal and vegetable kingdom; reserves of commercial timber and the area of timber plantings are increasing. The general ecological situation in many regions of the European part of the country, Siberia, the Far East and Central Asia has improved.

Since 1975, state planning of environmental measures has been carried out in our country and state statistical reporting according to indicators of the plan is being developed. If we were to analyze the basic indicators illuminating the impact of society on the environment and the utilization of natural resources, the preceding period would be characterized by many positive factors. Thus, in 1982 compared to 1975, discharge of polluted effluents into water bodies (including discharged water from rice systems) was reduced 28 percent, the volume of purified sewage grew 154 percent, while the volume of recycled and successively used water in industry increased almost

170 percent. A total of 85 cubic kilometers of water were saved. This is equalto the average yearly discharge of roughly two rivers like the Dnepr or four rivers like the Don.

In past years without a sharp increase in the construction of recycling systems, an acute shortage of water for the development of productive forces, especially agriculture, has been felt in many oblasts of the European part of the country. Reduction of the discharge of polluted sewage water and an increase in the volume of purified effluents have made it possible to ensure a significant improvement in the quality of most of the water sources of the Baltic, Black, Azov and Caspian sea basins.

Much has also been done in reducing the emission of harmful substances from fixed sources of atmostpheric pollution. Despite growth of more than 30 percent of gross industrial production in 1982 compared to 1975, emissions were reduced by 12 percent. The number of cities with an elevated level of pollution of the air basin has been significantly reduced.

The areas of land recultivated following industrial exploitation in 1981-1982 approximated the areas of damaged land and amounted to 251,000 hectares. Of this amount, 153,000 hectares were returned for utilization in agriculture. The area of soils protected from erosion with the help of agrotechnical measures--moldboardless cultivation with preservation of stubble (46.4 million hectares) and sowing with special antierosion seeders (42.9 million hectares), contour cultivation (27.9 million hectare) and so on--grew significantly.

The protection of forests and reindeer pasturages from fires, pests and diseases improved. Expenditures of the state on biotechnical measures for preservation and reproduction of wild animals and birds doubled compared to 1980. In 1982, the area of preserves, hunting-preserve enterprises and natural national parks reached 14 million hectares, and their total size--151 million hectares (compared to 123 million hectares in 1976). Reserve territories play a colossal role in preserving the genetic fund of natural resources and the carrying out of scientific research for the protection of nature, for which reason their further expansion will be continued.

Plans for the construction of new and modernization of existing enterprises have to provide without fail solutions for complex conversion of natural raw materials and rational utilization of formed and accumulated wastes into finished products or products suitable for further transportation and processing at other enterprises as well as for the creation of closed nondischarge systems of water supply and the use of progressive technological processes, excluding or significantly reducing the emission of harmful substances into the environment.

At the same time, problems of protection of the environment require constant attention to them on the part of ministries and departments, enterprises, collectivized farms and all working people. But not all possibilities in this direction are being sufficiently fully used. During 1981-1983, capital

investment allocated by the state for environmental measures were utilized within the limits of 86 percent and for construction and installation work--90 percent.

In the first 3 years of the 11th Five-Year Plan, the plan of capital investment and of putting into operation environmental facilities was underfulfilled. This particularly applies to a number of associations and enterprises of the USSR Ministry of Ferrous Metallurgy, the USSR Ministry of Nonferrous Metallurgy, the Ministry of Chemical Industry, the Ministry of Fertilizers [Minudobreniye] and the Main Administration of Microbiological Industry [Glavmikrobioprom]. Unsatisfactory work has been done in the construction of environmental facilities by contracting organizations of the USSR Ministry of Industry Construction, the USSR Ministry of Construction of Heavy Industry Enterprises, the USSR Ministry of Power and Electrification, the USSR Ministry of Construction and other construction ministries.

The facilities for purification of waste water with a capacity of 600,000 cubic meters per day in Baku (contractor--USSR Ministry of Industrial Construction) and also in Moscow (contractor--Main Administration for Construction of Engineering Structures in Moscow), the Mogilev Trash Processing Plant of the Belorussian SSR Ministry of Housing and Municipal Services (general contractor--USSR Ministry of Industrial Construction) failed to go into operation on schedule.

Special mention should be made of fulfillment of targets for prevention of pollution of water bodies in the Baltic, Black, Azov and Caspian sea basins. A part of the polluted and waste water of a number of enterprises of Kaliningrad and Klaipeda are dumped into the water bodies of the Baltic Sea.

The state of purity of the air evokes special concern at some industrial centers of Kemerovo, East Kazakhstan, Chelyabinsk, Donetsk, Dnepropetrovsk and other oblasts.

The adoption of immediate measures for increasing the rate of construction for the protection of the environment and ensuring the startup of all facilities planned for the 11th Five-Year Plan as well as creation of necessary construction starts for the future are required of the appropriate ministries and departments, councils of ministers of union republics and ispolkoms of local soviets of people's deputies.

The successful realization of plans for the construction of dust-, gas- and water-purification facilities and provision of instruments and equipment of automatic control over pollution of the environment of associations, enterprises and organizations largely depend on the volume of production of the corresponding equipment and instruments. This task so far is slow in being solved by machine-building ministries, and the development and introduction of series production of equipment and conduit fittings for water-supply systems and sewage purification structures are dragging. At the same time, such equipment is being produced by small-capacity plants operated principally by republic housing and municipal-service ministries. A significant portion of the products list of water-purification equipment is manufactured in limited quantities, and its quality fails to meet modern

requirements. The interests of the matter require the appointment of a chief machine-building ministry responsible for coordinating the output of water-purification equipment at the different enterprises.

It is necessary to promote creative innovations and to have more clear-cut organization of the use of inventions in the field of protection of the environment and rational use of natural resources. Developments of new technological processes, machines, equipment, instruments and materials are frequently poorly directed at searching for and achieving the most progressive and effective technical solutions. In this matter, the role of the State Committee for Inventions and Discoveries, which is responsible for choosing and analyzing the most promising and effective inventions ensuring the protection of the environment and rational use of natural resources and for informing ministries and departments concerning them, has not yet been felt.

At the present time, the basic means of preventing negative effects on the environment of discharges of industrial agricultural and municipal enterprises is providing them with equipment and facilities for purification of waste water and waste gases. In this connection, a significant amount of trapped products, consisting of a mixture of various compounds, is formed. For this there is frequently a lack of economically effective methods of treatment. These products enter collectors and then the contaminating substances are washed into underlying strata and surface water bodies.

The decisions of the 26th CPSU Congress set tasks for the development of low-waste and waste-free technological processes whose introduction would ensure economy of material resources and reduce the harmful impact on the natural environment. For the fulfillment of these decisions the USSR State Committee for Science and Technology and Gosplan USSR approved for 1981-1985 a program that included targets for the creation and introduction of 32 new technological processes for the processing of industrial and household wastes.

At the present time, low-waste technological processes are already finding wide application in production of some types of industrial products. Thus, the Angara Mining and Cement Combine has been completely converted to the processing of ash and slag of thermal electric power stations. This has made it possible to reduce the production cost of a ton of cement by 1.5 rubles. At enterprises of the USSR Ministry of Ferrous Metallurgy more than half of blast-furnace steel-smelting and ferroalloy slag is treated. This provides a reduction in production cost of almost 200 million rubles. In Staryy Oskol a large electrometallurgical combine is being built for the first time in the country. It belongs to this sector and will involve the use of a process of direct restoration of pellets. This will make it possible to to without open-hearth and coke-oven production and corresponding emissions of polluted substances into the natural environment. When the plant is fully operational, the ecological effect from the use of new technological processes compared to traditional ones will be expressed in a reduction of emissions of harmful substances into the atmosphere of up to 400,000 tons a year.

Scientific-research and experimental-design organizations of ministries and departments as well as institutes of the USSR Academy of Sciences and the academies of sciences of union republics face the task of more rapid carrying

out of developments for the creation and introduction of low-waste technological processes and production operations as well as necessary equipment.

The role of the economic responsibility of industrial and agricultural enterprises in the development and introduction of low-waste and waste-free processes and production operations is being increased. But the methods with which economic effectiveness of new equipment and measures for protection of the environment are now being determined insufficiently take into account economy of natural resources through full use of all components.

For this reason it is advisable to improve in ministries and departments the present organization of work for the creation and introductionof low-waste technological processes and to concentrate the efforts of scientists on the fastest possible completion of the most promising developments and their realization on an industrial scale. This does not mean, however, that we can reject putting into operation new dust-, gas- and water-purification installations and improving existing ones. They must enter the general technological cycle, ensuring the return to production of water resources, fuel and technological gases as well as the regeneration of valuable components from sludge and other solid wastes.

The first foundation of industrial production is mineral raw material. The effectiveness of the entire national economy largely depends on how thoroughly it is utilized. In recent years, individual deposits of nonferrous metals, as well as of petroleum and gas have begun to be utilized more comprehensively. Mineral waters at health resorts of the country have started to be used more economically through the introduction of new technological schemes of operation of the deposits. Compared to 1980, the level of extraction of coal, fuel shale and a number of very important types of ores of ferrous and nonferrous metals, potassium salts, mica and asbestos has grown somewhat. The extraction of mine and quarry chemical raw materials and their concentration, as well as of copper, lead and zinc and their metallurgical remaking has increased. At the same time, the level of extraction from underground of lead-zinc, nickel-cobalt and tin ores and phosphorites is being reduced. As before, losses of minerals in subterranean mining remain high because of slow introduction into production of progressive systems of working deposits. Installations ensuring the complex utilization of raw materials are slow in being put into operation. Such is the case in nonferrous metallurgy--for example, at Solnechnyy Ore Concentration Combine and in ferrous metallurgy--at Sokolovskoye, Sarbayskoye and other deposits.

It is necessary to solve more rapidly questions of industrial processing of secondary oxidized quartzites at deposits of the Kursk Magnetic Anomaly and Krivoy Rog Iron Ore Basin as well as of better utilization of wastes of mining production for the manufacture of construction materials. With the overcoming of sectorial barriers in the planning of use of ore raw materials and improvement of sectors of industry, the interest of subcontractors in the use of multicomponent ores will be greater and the transformation of a large part of ore mass extracted from underground into useful products will be speeded up.

The Soviets of People's Deputies, which have been given extensive rights in the struggle for pure air, water and the microclimate of our cities and villages, can play an important role in the introduction of low-waste and waste-free production operations and complex use of natural raw materials. Without the approval of local soviets, not a single quarry, not a single shaft can be opened, nor can plants, factories and livestock-raising complexes be built. They have the right to require strict observance of environmental and health standards on the part of those who plan, build and operate these facilities.

Not a single sector of the national economy is so tied to the problem of protection of nature as agriculture. In recent years, marked positive improvements have occurred in the use of land: its allocation for nonagricultural needs and intrafarm construction on kolkhozes and sovkhozes has been reduced; the rate of recultivation of land in industry and the return of recultivated land for use in agriculture have grown; fewer areas are removed from use as a result of their destruction by erosion. Work on reclamation of land and its agricultural assimilation has begun to be conducted in a more coordinated fashion.

As a result, during the years of the 10th and 11th Five-Year Plans, plowland area in the country increased and by the end of 1982 comprised 227 million hectares. But per-capita area is being reduced. Whereas in 1960, this indicator equaled 1.03 hectares, the figure in 1982 was 0.84. For maintenance of the attained level and necessary growth of production of agricultural products, increased fertility is required from each hectare, and compensation is needed through growth of yield for conditional losses of production caused by per-capita loss of plowland.

The main indicator of the soil's natural fertility is the presence of humus--a basic fertile substance. Studies by scientists, especially those involving the use of satellites, show that about 25 percent of the humus, and in places more, has been lost in the past century from the fields of steppe and forest-steppe zones. This occurs because as the result of deep and not always agrotechnically correct system of working the soil, erosion of that soil develops, leading to the removal from it of a large amount of humus through the agency of wind and water. Organic fertilizers are the chief element of adding humus to the soil. Where there is little humus in the soil, a big portion of fertilizer is not retained in the soil but "drops down" to ground water and is washed away, polluting water bodies. The viability of microorganisms ensuring the cycle of substances and maintaining the necessary chemical and physical properties of the soil depends on the presence of humus.

Therefore the successful fulfillment of the country's food program and the well-being of all the Soviet people directly depend on their relation to the soil and its protection from exhaustion and irrational use for nonagricultural needs. Concern for the soil is the duty of every Soviet individual for future generations.

In our country, which is successfully developing its economy, the requisite protection and growth of biological resources balanced with feeding possibilities and needs are assured. Measures carried out in recent years for

the reproduction and protection of wild fauna have contributed to a significant increase in the number of many types of valuable species of fur-bearing animals, including sable, beaver, saiga, moose and others. Marked successes have been achieved in pisciculture: fish catches have stabilized in inland water bodies. But at the same time, there are still frequent instances of animal habitat destruction, incidents of poaching and inadequate observance of preserve territory regulations. In environmental protection work, the importance of insects, which play an important role in increasing the yield of agricultural crops, enrichment of flora and fauna and observance of the natural balance, are frequently underrated.

Natural resources, the property of all of society, represents our national wealth. For this reason, Soviet legislation ensures the necessary legal protection of both natural sites and persons guarding it. Preserves, game reserves and national parks, which are important in the preservation of natural complexes, reproduction and enrichment of the resources of animal and vegetable organisms and the development of scientific recommendations for the protection of nature, especially need this. They occupy a prominent place in international cooperation for protection of the environment and conduct cultural, educational work among the population. Studies conducted at preserves contribute to the solution of a number of important problems of scientific and practical importance and in particular the development of recommendations for the preservation and restoration of forests, improvement of natural fodder fields, reproduction of valuable animals and animals, rational utilization of water resources and the development of biological methods of control of pests and diseases of plants.

Local organs of state government, personnel involved in protection of nature and tourist organizations are doing much work on protecting the environment while using it for the recreation of the population and tourism. Positive experience in this regard has been acquired in the Lithuanian, Latvian and Estonian republics and in a number of oblasts of the RSFSR and Ukrainian SSR. At the same time, the extensive increase in recent years of mass vacations by workers out in the wilderness, various types of tours and defects in their organization frequently result in a negative impact on the state of the natural environment. At these mass vacation and tour sites, the occurrence of forest fires and erosion processes, destruction of the vegetative cover and damage to the landscape, deterioration of the habitat of wild animals and birds, pollution of water bodies and reduction of fish stocks in them, littering grounds with cast-off wrapping and food wastes as well as other phenomena characterizing the reduced ecological stability of natural complexes have been observed.

The USSR Constitution requires of each citizen a thrifty attitude toward nature and participation in the protection of its riches. For this reason, it is helpful to increase educational and propagandistic work concerning its protection. Local state government organs, labor collectives and public organizations are responsible to society for the preservation and increase of the natural wealth of our country. They must adopt strict measures of action in regard to violators of environmental legislation.

Improvement of planning measures of nature protection is of importance in increasing protection of the environment and in the rational use of natural resources. The system of indicators existing in the state plan of economic and social development of the USSR does not fully respond to the present level of interrelations of society and nature.

At the present time, planning organs are computing expenditures for the accomplishment of environmental, nature-preservation and nature-restoration measures, but they do not sufficiently accurately measure the economic effect of these measures both for individual enterprises and for the national economy as a whole. For this reason, it would be useful to work out such a system of plan economic indicators which, basing itself on a value assessment of natural resources, would make it possible to have a clear idea of the degree of effectiveness of environmental work.

Moreover, the existing system of plan indicators does not display an active trend toward the accelerated introduction of scientific-technical progress in sectors of industry providing for reduction of pollution of the natural environment and more rational utilization of natural resources. A system is of plan indicators is needed for the protection of nature that promotes the fastest possible introduction of low-waste and waste-free technological processes into industrial production.

A balanced coordination is required between plan indicators of protection of nature and plan indicators for the use of natural resources. We must not, for example, resign ourselves to the fact that with an evergrowing shortage of a natural resource like fresh water, a water balance is not compiled in the regions of the Center and South of the European part of the country and in the republics of Central Asia and the Transcaucasus. No balance figures are being worked for the extraction and consumption of mineral raw materials used for the production of construction materials. These figures would be used for covering top-priority needs for this balance with mineral and overburden waste products, as well as wastes formed during processing of mineral raw materials and ash of thermal electric power stations. These wastes should be viewed as a fundamental raw-material base for further growth of the production volume of construction materials.

Today we have enough scientific developments that make it possible to optimize the system of the state plan for protection of nature.

The USSR Council of Ministers, guided by the decisions of the 26th CPSU Congress, for the purpose of increasing control over the fulfillment of environmental legislation and improvement of state management of this problem, formed in 1981 a Commission for the Protection of the Environment and Rational Utilization of Natural Resources of the Presidium of the USSR Council of Ministers headed by the deputy chairman of the USSR Council of Ministers. The commission consists of USSR ministers, chairmen of USSR state committees, deputy chairmen of Gosplan USSR, the USSR State Committee for Science and Technology and the USSR Committee of People's Control and other departments, prominent scientists, trade-union and komsomol officials. In addition to questions of control over the fulfillment of environmental legislation, the committee directs its activity to ensuring the implementation of a single

scientific-technical policy on protection and rational utilization of land and its mineral resources, water resources, air, the vegetable and animal kingdom, reproduction of natural wealth and improvement of man's environment.

The committee is also charged with the study of major problems of transformation of the country's nature, practice of using legislation, observance of ecological requirements in planning regional-production complexes, construction and modernization of enterprises, land-improvement and hygroengineering systems, transport and other facilities as well the examination of questions connected with the study and generalization of foreign experience and development of international ties in this field.

The committee coordinates the work of USSR ministries and departments and councils of ministers of union republics and public organizations on questions of protection of the environment and the rational use of natural resources. It keeps track of the work and provides the necessary aid to the same committees in the union republics.

In accordance with the USSR Constitution and the constitutions of the union republics, the entire responsibility for organization of the work of protection of the environment and rational utilization of natural resources is placed on the USSR Council of Ministers, the councils of ministers of union and autonomous republic and kray and oblast executive committees. They are now engaged in a large amount of work on protection of nature, involving in it the broad public and local soviets of people's deputies. In this connection, work is well organized in the Ukraine, Belorussia, Latvia, Moldavia and Voronezh, Lipetsk, Tambov, Moscow, Yaroslavl, Bryansk and other oblasts of the RSFSR.

A different situation has come to exist, for example, in Uzbek SSR. Nature-protection work is being poorly conducted in Kazakh SSR. Deficiencies exist in protection of the environment and utilization of natural resources in some of the other republics.

At the December (1983) Plenum of the CPSU Central Committee, it was pointed out that the present scale and rate of development of productive forces requires attitude changes toward questions connected with protection of the environment and rational utilization of natural resources. This is a task of great economic and social importance, inasmuch as we are in essence dealing with the health of people and with a thrifty and proprietary attitude toward the country's national wealth. Furthermore, these are also questions of the future. The conditions under which future generations will live depend on their solution. It is necessary to more determinedly and purposefully protect nature. Here, perhaps, as in no other sphere, a bureaucratic approach is intolerable. It sharply reduces the effectiveness of use of capital investment, interferes with the implementation of a single policy in the carrying out of environmental measures, gives rise to lack of responsibility for the ecological consequences of adopted solutions and results in illusory economy, which in the final analysis leads to large losses.

The concern for protection of nature is not a temporary campaign, but major permanent work. The Soviet people under the leadership of the Communist Party

are doing everything possible for the preservation of a healthy environment--one of the basic factors of their well-being. Our efforts are aimed at peaceful construction. We believe in the victory of intelligence over the dark, misanthropic ideas of the advocates of war and we believe that our planet will remain forever blue, full of everything living on it.

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